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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/600,619	06/23/2003	Jong-Pyng Chen	0941-0761P	6841

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EXAMINER

CREPEAU, JONATHAN

ART UNIT PAPER NUMBER

1745

DATE MAILED: 09/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/600,619	Applicant(s) CHEN ET AL.	
	Examiner Jonathan S. Crepeau	Art Unit 1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 July 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. This Office action addresses claims 1-21. Although they have been amended, the claims remain rejected for substantially the reasons of record. Accordingly, this action is made final.

Claim Rejections - 35 USC § 103

2. Claims 1-4 and 6-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murphy et al (U.S. Patent 6,059,943).

The reference is directed to a composite membrane for use in a direct methanol fuel cell. The membrane comprises an inorganic material dispersed in a polymer matrix. The inorganic material may comprise, among other materials, silica, zirconium phosphate, and heteropolyacids (see cols. 3 and 4). The base polymer may comprise polyvinylidene difluoride (PVDF) and polysulfone, among other materials (see col. 8, line 63 et seq.).

The reference does not expressly teach a layered membrane comprising an organic/inorganic composite membrane and a proton exchange organic membrane, as recited in claims 1, 13, and 19.

However, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because such a multi-layered structure would be rendered obvious by the disclosure of Murphy et al. It has generally been held that the duplication of parts is not patentably distinguishable unless a new or unexpected result is

produced (MPEP 2144.04). In this case, the use of a layered laminate membrane, each layer having the same composition, would not provide a new or unexpected result over simply using one membrane as disclosed in the reference. The composition of each layer reads on the claimed “organic/inorganic composite membrane” and “proton exchange organic membrane.”

Regarding the methanol permeability and ion conductivity ranges recited in the instant claims, these ranges would be rendered obvious by Murphy et al. In column 10, line 50, the reference discusses ion conduction and the “barrier properties” of the membrane. As such, the reference provides sufficient guidance to optimize these values.

Regarding claims 13-18, the claimed method steps would be rendered obvious by Murphy. The reference discloses several methods of making the membrane starting at column 11, line 65, including the step of blending the inorganic material into the organic polymer. Further, as a method of making a two-layer structure as discussed above, it would be obvious to perform a thermal pressing step using an adhesive. As such, the claimed method steps are not considered to distinguish over the reference.

3. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Murphy et al. as applied to claims 1-4 and 6-21 above, and further in view of Asukabe et al (U.S. Pre-Grant Publication No. 2001/0026893).

Murphy et al. do not expressly teach that the base polymer comprises PVDF-g-SPS, as recited in claim 5.

Asukabe et al. is directed to a polymer electrolyte membrane comprising, among other materials, PVDF-g-SPS (see pars. 33 and 34).

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to use the PVDF-g-SPS of Asukabe et al. in the membrane of Murphy et al. In paragraph 36, the Asukabe reference lists numerous advantages of the invention, including good electrode adherence, easy humidification, and excellent stability. As such, the artisan would be motivated to use the PVDF-g-SPS of Asukabe et al. in the membrane of Murphy et al.

Response to Arguments

4. Applicant's arguments filed July 18, 2006 have been fully considered but they are not persuasive. Applicants state that Murphy does not teach the now-claimed "proton exchange organic membrane" in addition to the organic/inorganic composite membrane. While it is acknowledged that Murphy expressly teaches only one composite membrane layer, it would be obvious to use a second composite membrane layer for the reasons set forth in the rejection above. Further, such a second composite membrane reads on the claimed "proton exchange organic membrane" because the composite membrane contains an organic component. It appears that Applicant's intention is to restrict the composition of the second membrane to only

an organic polymer. However, the claim language does not reflect this. Amendment of the claims to use a "consisting of" construction is suggested. However, Applicant is advised that entry of such amendment after final rejection is not a matter of right and may raise a new issue.

Conclusion

5. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (571) 272-1299. The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan, can be reached at (571) 272-1292. The phone number for the organization where this application or proceeding is assigned is (571) 272-1700. Documents may be faxed to the central fax server at (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jonathan Crepeau
Primary Examiner
Art Unit 1745
September 8, 2006